Marine Environmental Data Service

REAL-TIME OCEANOGRAPHIC DATA TRANSMITTED DURING THE 1979 FLEMISH CAP INTERNATIONAL EXPERIMENT

Jean Gagnon

DATA RECORD

NO. 1

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Real-Time Oceanographic Data Transmitted during the 1979 Flemish Cap (47°N, 45°W) International Experiment

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DEPARTMENT OF FISHERIES AND OCEANS

OTTAWA, CANADA

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ABSTRACT

Oceanographic temperature and salinity observations during the 1979 International Flemish Cap Experiment conducted by members of the Northwest Atlantic Fisheries Organization (NAFO) are reproduced here. These data were transmitted in real-time to coastal radio stations on Canada's east coast and subsequently relayed via the Integrated Global Ocean Station System (IGOSS) onto the Global Telecommunications System (GTS) from which they were accessible at the Marine Environmental Data Services Branch (MEDS) as well as other international participants.

RÉSUMÉ

Ce rapport reproduit les observations de température et salinité faites durant l'Expérience Internationale du Cap Flamand en 1979 par les membres de l'Organization des Pêches dans d'Atlantique Nord-ouest. Ces données étaient transmises en temps réel par radio des navires à des stations côtières canadiennes qui les relayaient à travers le Système Mondial Intégré de Stations Océaniques (SMISO) au Système Global de Télécommunications où elles étaient disponibles à la Direction des Services des Données sur le Milieu Marine (SDMM) et aux participants internationaux.

INTRODUCTION

The Environmental Subcommittee of ICNAF/NAFO (International Commission for the Northwest Atlantic Fisheries/Northwest Atlantic Fisheries Organization), based on the report of the Flemish Cap Working Group which met at Murmansk, USSR, during 16-19 May 1977, recommended and subsequently approved:

> "that a coordinated international research project be launched on the factors determining year-class success for Flemish Cap groundfish, with emphasis on Cod and Redfish." (Anon. 1977, p. 77).

The Working Group strongly emphasized the need for the rapid exchange of data, by radio if possible, and/or immediately after each cruise, rather than at some later time.

The Group recognized the large time lag resulting from each country's individual processing and subsequent data submission to the World Data Centres, A and B (WDC), for eventual dissemination to the participants, hence a more rapid means of data exchange was needed.

The Marine Environmental Data Services Branch (MEDS) of the Department of Fisheries and Oceans, acting as regional oceanographic data centre for ICNAF/NAFO, recommended the use of the joint IOC/WMO Integrated Global Ocean Station System (IGOSS) during the Experiment. This System, using internationally accepted codes and formats, allowed for the dissemination of oceanographic data via ship's radio to any nearby shore-based meteorological station, from which it was automatically relayed onto a world-wide communications system. A preliminary experiment during April 18 to May 1, 1978, by the Polish research vessel *Wieczno*, demonstrated the feasibility of exchanging oceanographic data in real-time via radio to major centres linked by the Global Telecommunications System (GTS). The Participating Members in the Experiment subsequently agreed to this means of data exchange, recognizing that the fully-processed data was still to be exchanged through MEDS and WDC as appropriate under present international agreements.

PROCEDURES AND METHODS

Canadian and United States vessels, using conductivity-temperature-depth (CTD) and expendable bathythermograph (XBT) instruments reduced the analog traces to a number of significant data points sufficient to adequately reproduce the traces. Temperature and salinity data reported were not corrected for instrument bias, a task performed only later during full calibration and processing of the data. USSR vessels, lacking the facilities to determine salinities in real-time, reported temperature observations recorded at discrete levels using reversing thermometers i.e. bottle observations.

These data points were coded into the appropriate IGOSS BATHY or TESAC radio message format (Gagnon 1979) as accepted by the Intergovernmental Oceanographic Commission (IOC) and the World Meteorological Association (WMA) and radioed to the nearest coastal meteorological radio station (VØN, St. John's NFLD.). Here the radio messages were inserted onto a teletype circuit connected to the national meteorological/oceanographic centre in Halifax, Nova Scotia. These messages were then routed to the Global Telecommunications System (GTS) linking Washington and Moscow as two of the major network centres. MEDS monitored all messages from Ottawa by means of an output link of the GTS circuit.

OBSERVATIONS

Table 1 summarizes the IGOSS data received at MEDS from the eight research cruises conducted on and near the Flemish Cap (47°N, 45°W) by Canada, the USSR, and the US Coast Guard during spring and summer of 1979. The actual data stored in MEDS IGOSS databanks is reproduced on the accompanying microfiche. Track charts of the individual cruises (Figs. 1 to 8) were plotted from the messages received at MEDS. A total of 78 BATHY and 778 TESAC messages were received during the experiment.

The higher quality, fully processed CTD and XBT data collected by Canada and the US Coast Guard have yet to be received at MEDS. The fully processed USSR bottle observations were received and input into the ICNAF/NAFO databanks at MEDS in November of 1979.

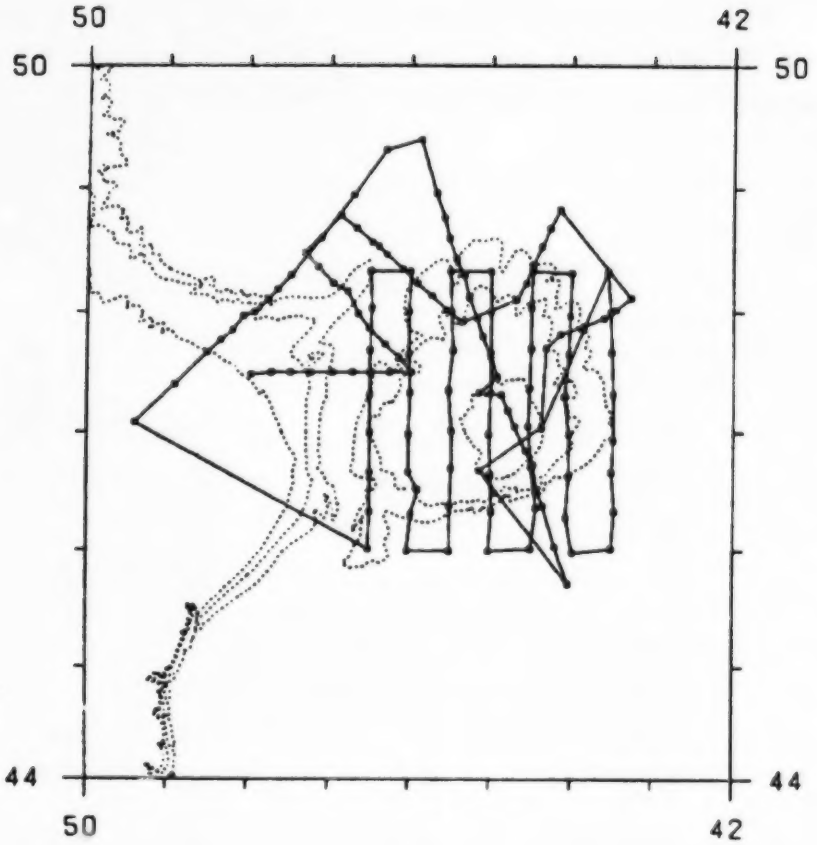
IGOSS data quality was initially very poor due mainly to two factors:

(a) inexperienced communications operators, unfamiliar with this type of traffic, and

(b) improper adherence to strict internationally-accepted message formats by the originators of the data. The communications system has since improved to the point where less than 2 percent of the errors may be attributed to message handling by the communications system.

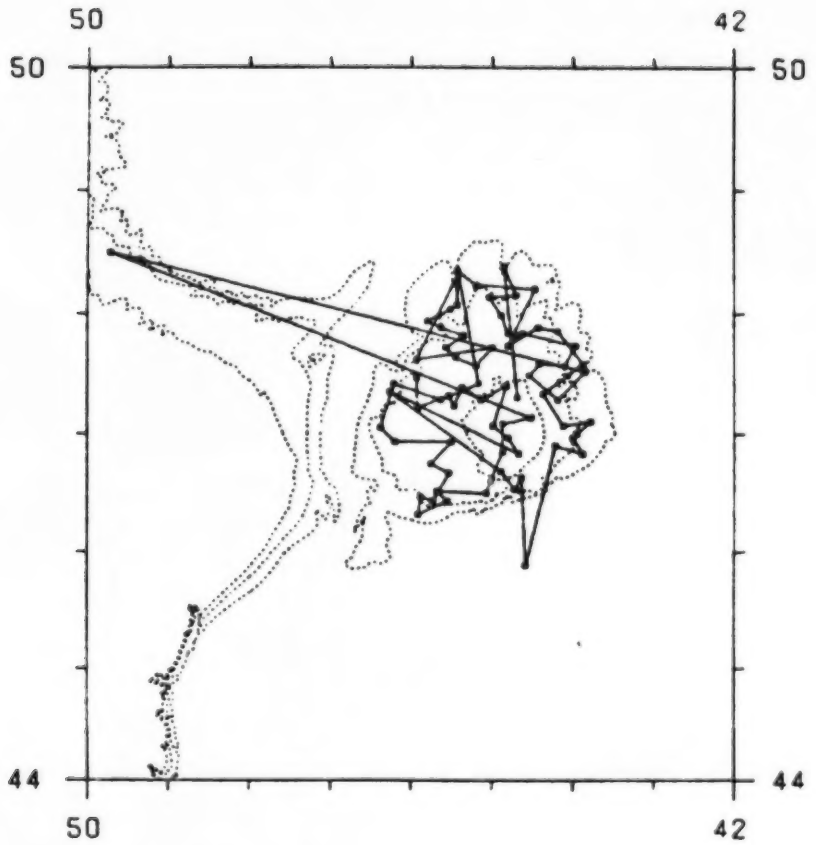
Table 1. IGOSS data from Flemish Cap cruises.

SHIP	CALL SIGN	DATES (1979)	MESSAGES	PARAMETERS	TRACK CHART
CSS HUDSON	CGDG	14-28 January	133	T,S	Fig. 1.
GADUS ATLANTICA	VC9450	4-19 February	74	T	Fig. 2.
GADUS ATLANTICA	VC9450	20-29 March	22	T,S	Fig. 3.
GEMMA	ESNJ	8 April-2 June	206	T	Fig. 4.
SULOY	EVPW	24 April-18 June	216	T	Fig. 5.
GADUS ATLANTICA	VC9450	4-12 May	59	T,S	Fig. 6.
CSS DAWSON	CGBV	8-19 July	87	T,S	Fig. 7.
USS EVERGREEN	NRXD	1-20 August	55	T,S	Fig. 8.



hudson (cgdg) 14/ 1/79 - 28/ 1/79 133 STATIONS

Figure 1.



gadus
atlantica (vc9450) 4/ 2/79 - 19/ 2/79 74 STATIONS

Figure 2.

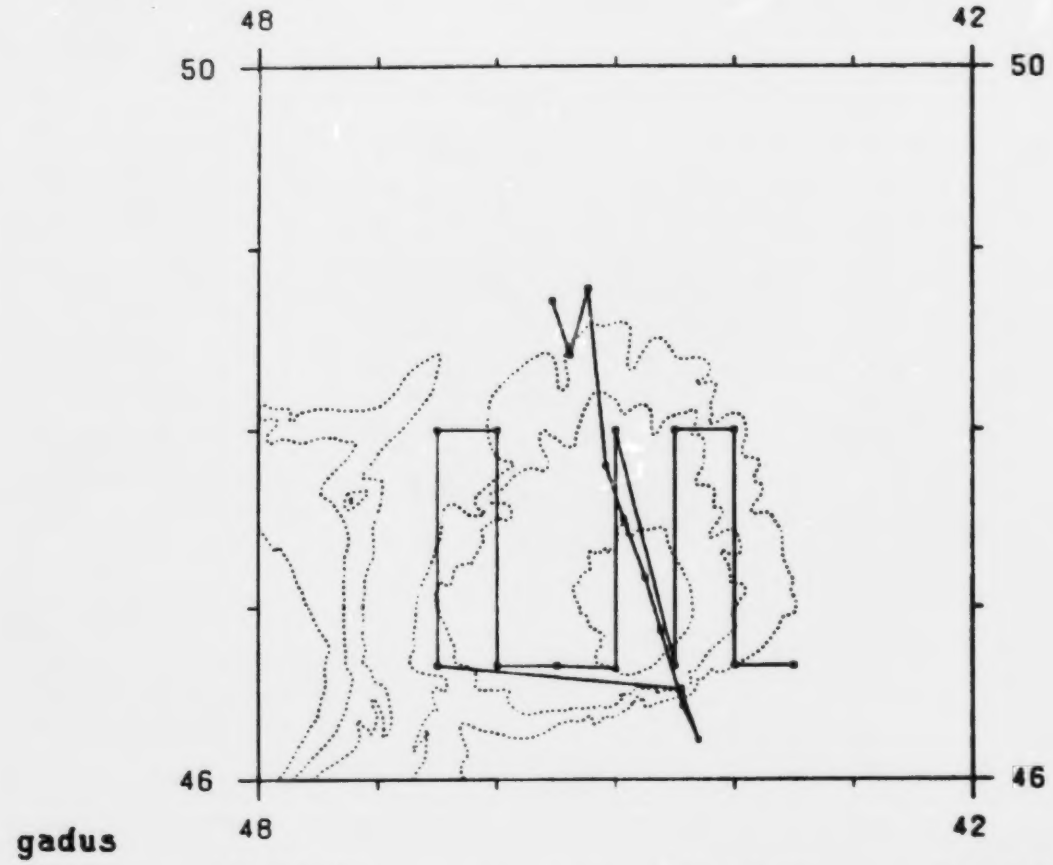
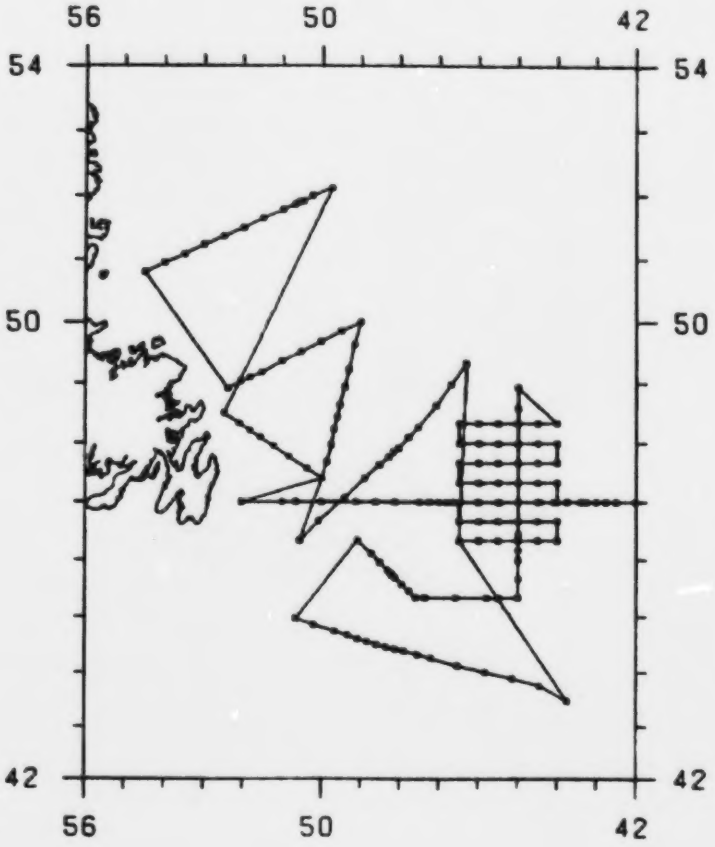
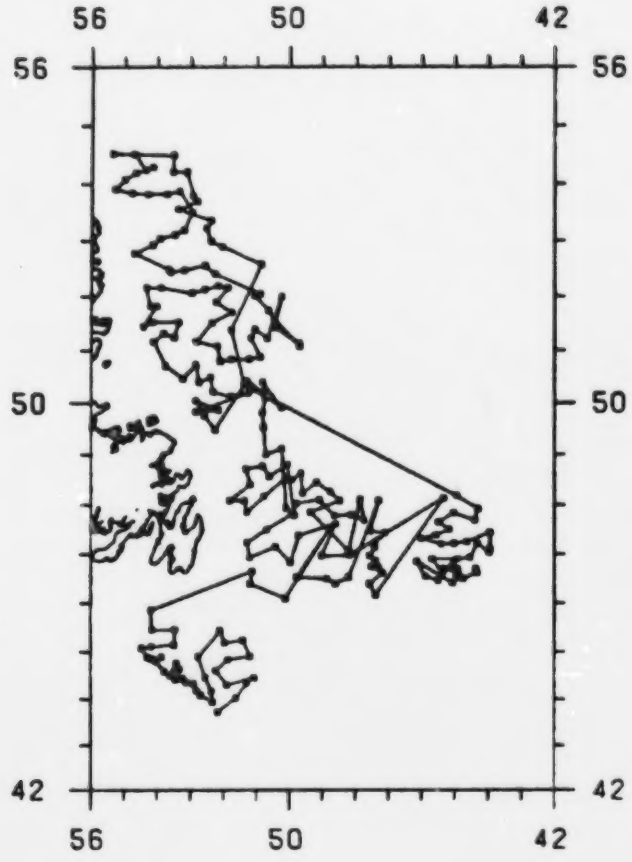

48
42
50
50
46
46
48
42
gadus
atlantica (vr.9450)
20/ 3/79 - 29/ 3/79
22 STATIONS

Figure 3.



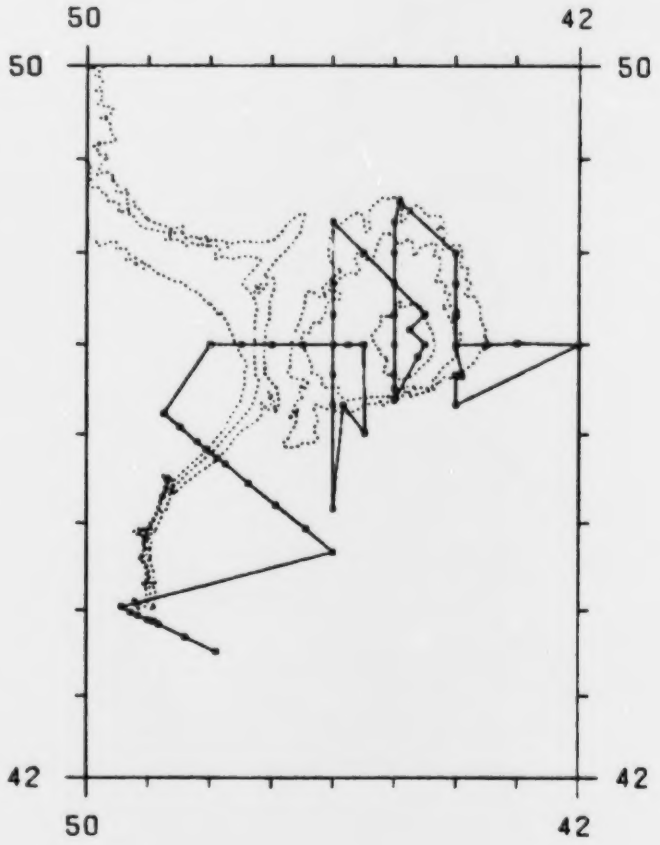
gemma (esnj) 8/ 4/79 - 2/ 6/79 206 STATIONS

Figure 4.



suloy (evpw) 24/ 4/79 - 18/ 6/79 216 STATIONS

Figure 5.



gadus
atlantica (vc9450) 4/ 5/79 - 12/ 5/79 59 STATIONS

Figure 6.

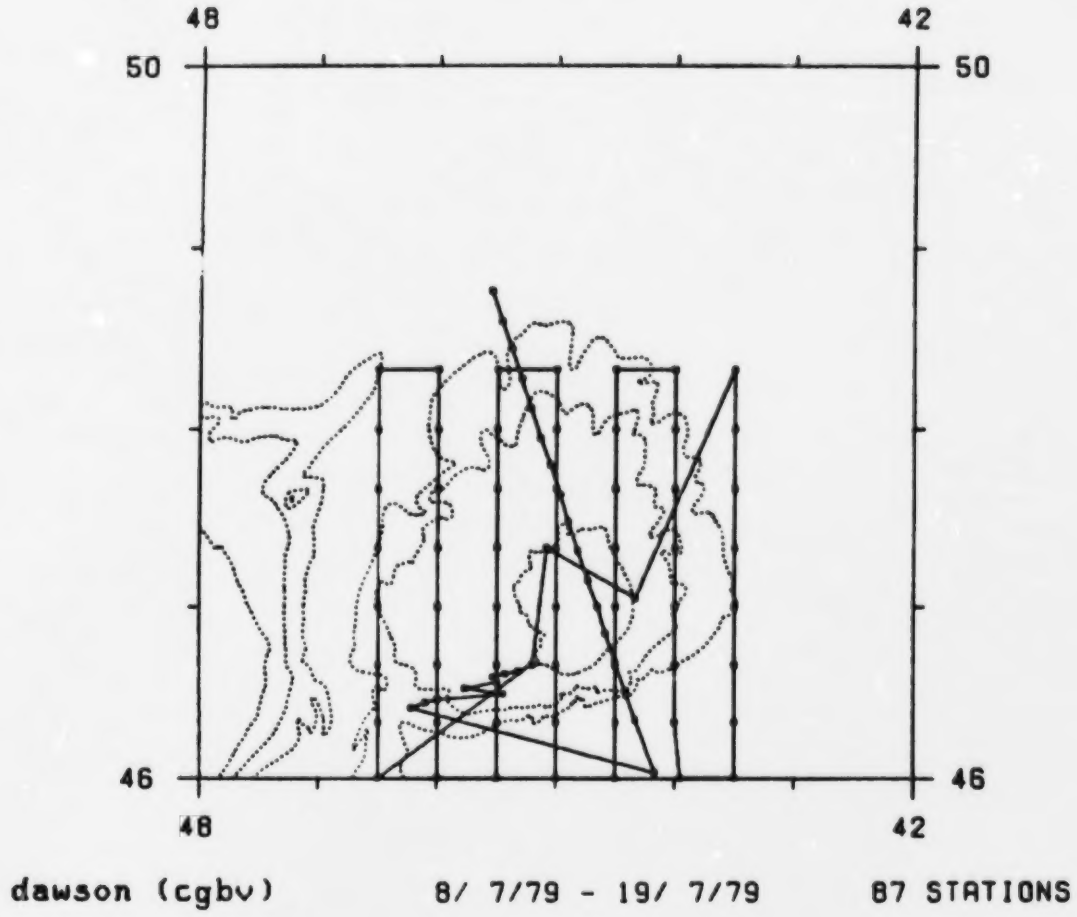
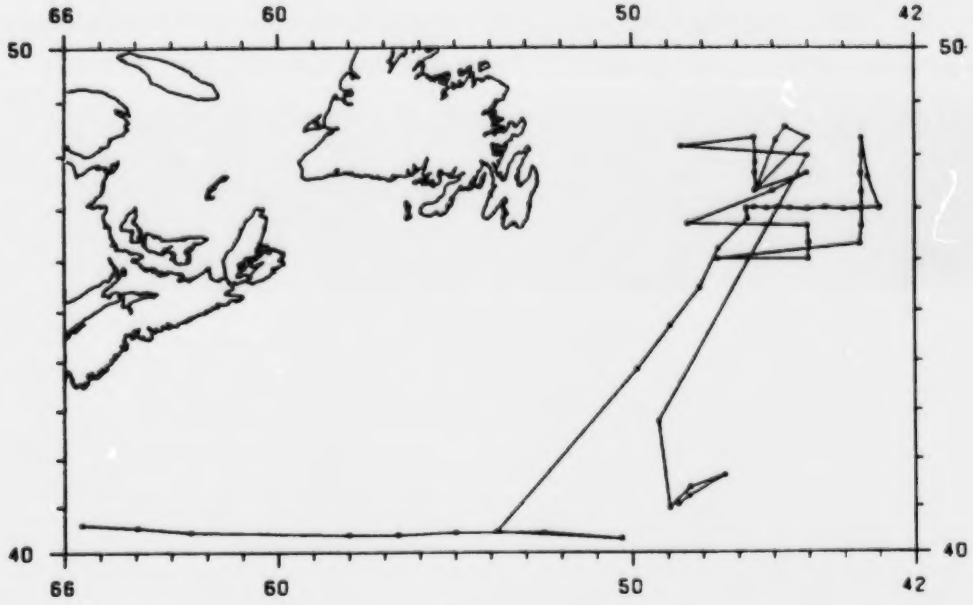


Figure 7.



evergreen (nrxd) 1/ 8/79 - 20/ 8/79 55 STATIONS

Figure 8.

REFERENCES

Anon. 1977. Report of environmental subcommittee. International Commission for the Northwest Atlantic Fisheries, Redbook, Dartmouth, Canada: 116 p.

Gagnon, J. 1979. Instruction manual for radio transmission of oceanographic data using BATHY/TESAC formats. Fisheries and Oceans, Mar. Environ. Data Serv.: 14 p.